What is claimed is:

1. An apparatus for transmitting packets, said apparatus comprising:

a line controller that controls packet flow over a plurality of physical lines;

a line transmitting unit, connected by said plurality of physical lines, said line transmitting unit operable to add an identifier information to packets, said identifier information unique to each packet, and thereupon, said line transmitting unit prepares a plurality of copies for each of said packets in accordance with the number of said plurality of physical lines connected to said line transmitting unit, and wherein

said line transmitting unit transmits said plurality of copies for each of said packets, one copy over each of said plurality of physical lines, and wherein each of said plurality of copies for each of said plurality of packets comprises said identical identifier information; and wherein at least two copies of each packet are sent to a destination over at least two of said plurality of physical lines.

2. The apparatus of claim 1 wherein said line controller controls said plurality of physical lines in accordance with a first layer (physical layer) of an OSI reference model.

3. The transmitting apparatus of claim 1, further comprising a protocol processor that processes said packets in accordance with at least a third layer of an OSI reference model, and

wherein responsive to instructions from said protocol processor, said line transmitting unit prepares packets to which identifier information unique to each of said packets is added.

4. A packet transmitting method, comprising:

adding to each packet a unique identifier information;

preparing a plurality of copies for each of said packets, each copy having identical content, said plurality of copies prepared in accordance with a plurality of physical lines; and

transmitting said plurality of copies, one to each of said plurality of physical lines.

5. The packet transmitting method of claim 4, further comprising:

controlling said plurality of physical lines in accordance with a first layer (physical layer) of an OSI reference model.

6. The packet transmitting method of claim 4, wherein said transmitting said plurality of copies further comprises:

substantially contemporaneously transmitting said plurality of copies of said plurality of packets to said plurality of physical lines in accordance with a second layer (data link layer) of an OSI reference model.

7. The packet transmitting method of claim 4, wherein said transmitting said plurality of copies further comprises:

instructing transmission of packets in accordance with at least a third layer (protocol layer) of an OSI reference model.

8. An apparatus for receiving packets, said apparatus comprising:

a line controller that controls packet flow over a plurality of physical lines;

a packet information storage that stores identifier information unique to each packet, said identifier information appended to packets flowing over said plurality of physical lines; and

a line receiver unit, connected by said plurality of physical lines, said line receiving unit operable to monitor packets received from said plurality of physical lines, and confirm whether identifier information of said packets has been stored in said packet information storage, and when said identifier information of said received packets has not been stored therein, causes said identifier information of said received packets to be stored in said packet information storage.

9. The receiving apparatus of claim 8, wherein said line controller controls said plurality of physical lines in accordance with a first layer (physical layer) of an OSI reference model.

10. The receiving apparatus of claim 8, wherein

when said identifier information of said received packets has not been stored, said line receiver stores said identifier information of said received packets in said packet information storage; and thereupon forwards said received packets; and deletes said identifier information.

11. The receiving apparatus of claim 10, wherein:

said line receiver forwards said received packets in accordance with a second layer (data link layer) of an OSI reference model.

12. The receiving apparatus of claim 10, further comprising:

a protocol processor that receives said forwarded packets whose identifier information has been deleted, from said line receiver and thereupon effects a protocol process in at least a third layer of an OSI reference model on said packets.

13. A method for receiving packets from a plurality of physical lines, said method comprising:

confirming reception of at least one of said packets;

determining whether identifier information unique to each packet has been stored in a storage; and

if identifier information corresponding to identifier information of the received packets is not stored in said storage, storing said identifier information of said received packets therein; and

effecting a protocol process on said received packets, said protocol process further comprising deleting said identifier information.

14. An apparatus for receiving packets, comprising:

a line controller that controls packet flow over a plurality of physical lines;

a plurality of mode flags, each mode flag associated with one of said plurality of physical lines, and for respectively storing either a primary or a secondary mode therein;

a plurality of storage areas that store received packets; and

a plurality of line receivers; wherein at least one of said plurality of line receivers delivers received packets from one of said plurality of storage areas for forwarding if a mode flag corresponding to said at least one of said plurality of line receivers has a primary mode stored therein.

15. The apparatus of claim 14, wherein said line controller controls said plurality of physical lines in a first layer (physical layer) of an OSI reference model.

16. The receiving apparatus of claim 14, wherein each of said plurality of line receivers abandons received packets if a mode flag corresponding to said at least one of said plurality of line receivers has a secondary mode stored therein.

17. The apparatus of claim 16, wherein:

said protocol processor performs a protocol process in a third layer or higher of an OSI reference model.

18. The receiving apparatus of claim 14, further comprising:

a receiving line switching unit that monitors a presence of a failure of one of said plurality of physical lines corresponding to one of said plurality of mode flags storing a primary mode therein, and when a failure is detected, changes said one of said plurality of mode flags storing said primary mode therein to a secondary mode; and changes another of said plurality of mode flags storing said secondary mode therein to a primary mode.

19. The receiving apparatus of claim 14, further comprising:

a receiving line switching unit that monitors a presence of a failure of one of said plurality of physical lines corresponding to one of said plurality of mode flags storing a primary mode therein, and when a failure is detected, changes said one of said plurality of mode flags storing said primary mode therein to a secondary mode; and changes another of said plurality of mode flags storing said secondary mode therein to a primary mode; and thereupon

compares each received packet stored in said received packet storage area corresponding to said mode flag changed to said secondary mode and each received packet stored in said received packet storage area corresponding to said mode flag changed to said primary mode; and receives a received packet equivalent to each packet lost due to said failure.

20. The receiving apparatus of claim 14, further comprising:

a receiving line switching unit that monitors a presence of a failure of one of said plurality of physical lines corresponding to one of said plurality of mode flags storing a primary mode therein, and when a failure is detected, changes said one of said plurality of mode flags storing said primary mode therein to a secondary mode; and

changes another of said plurality of mode flags storing said secondary mode therein to a primary mode; and thereupon

compares each received packet stored in said received packet storage area corresponding to said mode flag changed to said secondary mode and each received packet stored in said received packet storage area corresponding to said mode flag changed to said primary mode.

21. A packet receiving method, comprising:

confirming reception of packets from a plurality of physical lines;

storing said received packets in a received packet storage area provided in association with each of said plurality of physical lines, respectively; and

conditioned upon a mode flag associated with one of said plurality of physical lines storing a primary mode, delivering received packets to a protocol processor for effecting a protocol process.

22. The packet receiving method of claim 21, further comprising:

monitoring a presence of received packets from said plurality of physical lines;

when a received packet's presence is confirmed by said monitoring, storing said received packet in said received packet storage area; and

when said mode flag associated with one of said plurality of physical lines stores a secondary mode therein, abandoning said received packet.

23. The packet receiving method of claim 21, further comprising:

monitoring a presence of a failure of one of said plurality of physical lines corresponding to said mode flag storing said primary mode therein;

when a failure is detected, changing said mode flag storing said primary mode therein to a secondary mode; and changing a mode flag storing said secondary mode therein to said primary mode;

comparing each received packet stored in said received packet storage area corresponding to said mode flag changed to said secondary mode and each received packet stored in said received packet storage area corresponding to said mode flag changed to said primary mode; and

receiving for further processing a received packet equivalent to each packet lost due to said failure, said equivalence established by said comparing.

24. A packet receiving method, comprising:

monitoring a presence of packets received from a plurality of physical lines;

delivering received packets to a protocol processor for effecting a protocol process on said received packets when mode flags provided in association with each of said plurality of physical lines stores a primary mode; and

when said each mode flag stores a secondary mode therein, abandoning said received packets.

25. The packet receiving method of claim 24, further comprising:

monitoring a presence of a failure of one of said plurality of physical lines corresponding to said mode flag storing said primary mode therein; and

when a failure is detected, changing said mode flag storing said primary mode therein to a secondary mode and changing a mode flag storing said secondary mode therein to said primary mode.

26. An apparatus for transmitting and receiving packets, said apparatus comprising:

a line controller for controlling a plurality of physical lines;

a line transmitting unit that prepares packets with identifier information added thereto, said identifier information unique to each of the packets, said packets prepared in association with a number of said plurality of physical lines; said line transmitting unit operative to transmit packets having the same contents to said plurality of physical lines;

a packet information storage that stores identifier information unique to each of said received packets, said identifier information having been added to said packets from another apparatus connected by said plurality of physical lines; and

at least one line receiver that monitors received packets; and responsive to a received packet, confirms whether identifier information of a received packet has been stored in said packet information storage; and when identifier information having the same contents as that of said received packets has not been stored therein, allowing said

packet information storage to store said identifier information of said received packets therein.

27. The apparatus of claim 26, wherein said line controller controls said plurality of physical lines in a first layer (physical layer) of an OSI reference model.

28. A transmitting and receiving apparatus for exchanging packets, comprising:

a line controller for controlling a plurality of physical lines;

a line transmitting unit that prepares packets with identifier information unique each packet added thereto, in association with a quantity of said plurality of physical lines, and transmits packets having identical content to said plurality of physical lines;

mode flags associated with each of said plurality of physical lines, said mode flags operative to store either a primary or a secondary mode; and

line receivers that deliver packets received from said plurality of physical lines to a protocol processor when said mode flags store a primary mode therein, said line receivers further operative to abandon received packets when said mode flags store a secondary mode therein.

29. The apparatus of claim 28, wherein said line controller controls said plurality of physical lines in a first layer (physical layer) of an OSI reference model.

30. The transmitting apparatus of claim 1, wherein said identifier information is an FCS (Frame Check Sequence) value of an Ethernet frame.

31. The transmitting apparatus of claim 1, wherein said identifier information comprises an FCS value of an IEEE (Institute of Electrical and Electronics Engineers) 802.3 frame.

32. The transmitting apparatus of claim 1, wherein said identifier information comprises an FCS value of an IEEE802.5 Token Ring frame.

33. The transmitting apparatus of claim 1, wherein said identifier information comprises an FCS value of an ANSI (American National Standard Institute) X3T9 FDDI (Fiber Distributed Data Interface) frame.

34. The transmitting apparatus of claim 1, wherein said identifier information comprises a CRC (Cyclic Redundancy Check) value of an ANSI X3T9 Fiber Channel frame.

35. The receiving apparatus of claim 8, wherein said identifier information comprises an FCS (Frame Check Sequence) value of an Ethernet frame.

36. The receiving apparatus of claim 8, wherein said identifier information comprises an FCS value of an IEEE (Institute of Electrical and Electronics Engineers) 802.3 frame.

37. The receiving apparatus of claim 8, wherein said identifier information comprises an FCS value of an IEEE802.5 Token Ring frame.

38. The receiving apparatus of claim 8, wherein said identifier information comprises an FCS value of an ANSI (American National Standard Institute) X3T9 FDDI (Fiber Distributed Data Interface) frame.

39. The receiving apparatus of claim 8, wherein said identifier information comprises a CRC (Cyclic Redundancy Check) value of an ANSI X3T9 Fiber Channel frame.

40. A transmitting apparatus for transmitting packets to another apparatus through a plurality of physical lines, comprising:

a line transmitting unit for preparing packets with identifier information added thereto unique to each packet, in association with the quantity of said plurality of physical lines, and transmitting said packets to said plurality of physical lines.

41. A receiving apparatus for receiving packets from another apparatus through a plurality of physical lines, comprising:

a packet information storage for storing therein identifier information unique to each packet, which is added to said received packets; and

at least one line receiver for monitoring the received packets and when the received packets are confirmed, confirming whether the identifier information of the received packets are stored in the packet information storage, and when the identifier

information having the same contents as those of the received packets are not stored therein, allowing said packet information storage to store the identifier information of the received packets therein.

42. A computer data signal embodied in a transmission medium comprising:

code for adding to each packet a unique identifier information;

code for preparing a plurality of copies for each of said packets, each copy having identical content, said plurality of copies prepared in accordance with a plurality of physical lines; and

code for transmitting said plurality of copies, one to each of said plurality of physical lines.

43. The computer data signal of claim 42, further comprising:

code for controlling said plurality of physical lines in accordance with a first layer (physical layer) of an OSI reference model.

44. The computer data signal of claim 42, wherein said code for transmitting said plurality of copies further comprises:

code for substantially contemporaneously transmitting said plurality of copies of said plurality of packets to said plurality of physical lines in accordance with a second layer (data link layer) of an OSI reference model.

45. The computer data signal of claim 42, wherein said code for transmitting said plurality of copies further comprises:

code for instructing transmission of packets in accordance with at least a third layer (protocol layer) of an OSI reference model.

46. A computer data signal embodied in a transmission medium comprising:

code for confirming reception of packets from a plurality of physical lines;

code for storing said received packets in a received packet storage area provided in association with each of said plurality of physical lines, respectively; and

code for delivering received packets to a protocol processor for effecting a protocol process, conditioned upon a mode flag associated with one of said plurality of physical lines storing a primary mode.

47. The computer data signal of claim 46, further comprising:

code for monitoring a presence of received packets from said plurality of physical lines; and

code for storing said received packet in said received packet storage area, when a received packet's presence is confirmed by said monitoring, and abandoning said received packet, when said mode flag associated with one of said plurality of physical lines stores a secondary mode therein.

48. The computer data signal of claim 46, further comprising:

code for monitoring a presence of a failure of one of said plurality of physical lines corresponding to said mode flag storing said primary mode therein;

code for changing said mode flag storing said primary mode therein to a secondary mode; and changing a mode flag storing said secondary mode therein to said primary mode, when a failure is detected;

code for comparing each received packet stored in said received packet storage area corresponding to said mode flag changed to said secondary mode and each received packet stored in said received packet storage area corresponding to said mode flag changed to said primary mode; and

code for receiving for further processing a received packet equivalent to each packet lost due to said failure, said equivalence established by said code for comparing.

49. A computer program product for transmitting packets, said product comprising:

code for adding to each packet a unique identifier information;

code for preparing a plurality of copies for each of said packets, each copy having identical content, said plurality of copies prepared in accordance with a plurality of physical lines;

code for transmitting said plurality of copies, one to each of said plurality of physical lines; and

a computer readable storage medium for holding the codes.

50. The computer program product of claim 49, further comprising:

code for controlling said plurality of physical lines in accordance with a first layer (physical layer) of an OSI reference model.

51. The computer program product of claim 49, wherein said code for transmitting said plurality of copies further comprises:

code for substantially contemporaneously transmitting said plurality of copies of said plurality of packets to said plurality of physical lines in accordance with a second layer (data link layer) of an OSI reference model.

52. The computer program product of claim 49, wherein said code for transmitting said plurality of copies further comprises:

code for instructing transmission of packets in accordance with at least a third layer (protocol layer) of an OSI reference model.

53. A computer program product for receiving packets, said computer program product comprising:

code for confirming reception of packets from a plurality of physical lines;

code for storing said received packets in a received packet storage area provided in association with each of said plurality of physical lines, respectively; and

code for delivering received packets to a protocol processor for effecting a protocol process, conditioned upon a mode flag associated with one of said plurality of physical lines storing a primary mode; and

a computer readable storage medium for holding the codes.

54. The computer program product of claim 53, further comprising:

code for monitoring a presence of received packets from said plurality of physical lines; and

code for storing said received packet in said received packet storage area, when a received packet's presence is confirmed by said monitoring, and abandoning said received packet, when said mode flag associated with one of said plurality of physical lines stores a secondary mode therein.

55. The computer program product of claim 53, further comprising:

code for monitoring a presence of a failure of one of said plurality of physical lines corresponding to said mode flag storing said primary mode therein;

code for changing said mode flag storing said primary mode therein to a secondary mode; and changing a mode flag storing said secondary mode therein to said primary mode, when a failure is detected;

code for comparing each received packet stored in said received packet storage area corresponding to said mode flag changed to said secondary mode and each received packet stored in said received packet storage area corresponding to said mode flag changed to said primary mode; and

code for receiving for further processing a received packet equivalent to each packet lost due to said failure, said equivalence established by said code for comparing.